

Rhopalocera and Grypocera of Turkey 16.

Taxonomic notes on *Plebeius christophi* and *Plebeius idas* in northeastern Turkey (Lepidoptera: Lycaenidae)

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Samenvatting. Taxonomische aantekeningen betreffende *Plebeius christophi* en *Plebeius idas* in Noordoost-Turkije (Lepidoptera: Lycaenidae)

De taxonomie, verspreiding en bionomie van *Plebeius christophi* (Staudinger, 1874) en *P. idas* (Linnaeus, 1761) worden behandeld, met bijzondere aandacht voor Noordoost-Turkije en aangrenzende gebieden. Lectotypes worden aangeduid voor de nominale taxa *Lycaena Christophi* Staudinger, 1874, *Lycaena Argyrognomon* Brgstr. var. *Transcaucasica* Rebel, 1901 en *Lycaeides idas* L. Höhenform *altarmena* Forster, 1936, en hun type-lokaliteit wordt in deze studie restrictiever vastgesteld. *P. christophi* is een eremische soort, beperkt tot dorre steppe en halfwoestijn met *Alhagi* spp. (mogelijk uitsluitend *Alhagi maurorum* Medikus), met welke plant de vlinder innig verbonden is: hoogstwaarschijnlijk is dit de voedselplant van de rups (cf. Schurian 1997). De soort heeft vermoedelijk twee generaties. *P. idas* daarentegen is een arboreale soort met een groot Holarctisch verspreidingsgebied, hoewel het de mediterrane streken grotendeels mijdt. In Oost-Anatolië heeft ze waarschijnlijk slechts één generatie; ze leeft in grasrijke biotopen, vaak in bosgebieden, en de rups voedt zich met een grote verscheidenheid aan planten van de familie Fabaceae. In Turkije wordt *P. christophi* vertegenwoordigd door de ondersoort *P. christophi transcaasicus* (Rebel, 1901), welke hier slechts in het noordoosten (Arasdal, provincies Kars en Iğdır) voorkomt. Ze is er sympatrisch, doch niet syntoop, met *P. idas baldur* (Hemming, 1934), waarbij laatstgenoemde in koelere biotopen voorkomt op hoogtes van meer dan 2000 m. *P. idas baldur* is wijdverbreid in Turkije, behalve in het uiterste noordoosten (streek rond Posof, provincie Ardahan en het aangrenzende deel van de provincie Artvin), waar *P. idas altarmena* (Forster, 1936) voorkomt. Laatstgenoemd taxon lijkt uiterlijk nogal sterk op *P. christophi transcaasicus* en dit heeft Hesselbarth, van Oorschot & Wagener (1995) misleid toen zij het, hoewel voorlopig, hieronder thuisbrachten.

Résumé. Notices taxonomiques concernant *Plebeius christophi* et *Plebeius idas* en Turquie du nord-est (Lepidoptera: Lycaenidae)

La taxonomie, distribution et bionomie de *Plebeius christophi* (Staudinger, 1874) et *P. idas* (Linnaeus, 1761) sont traitées, avec une attention particulière pour la Turquie du nord-est et les régions avoisinantes. Des lectotypes sont désignés pour les taxa nominatifs *Lycaena Christophi* Staudinger, 1874, *Lycaena Argyrognomon* Brgstr. var. *Transcaucasica* Rebel, 1901 et *Lycaeides idas* L. Höhenform *altarmena* Forster, 1936, et leur localité-type est définie de façon plus restrictive dans la présente étude. *P. christophi* est une espèce érémitique, limitée aux steppes arides et aux semi-déserts dominés par *Alhagi* spp. (peut-être exclusivement *Alhagi maurorum* Medikus), plante à laquelle le papillon est apparemment intimement associé: selon toute probabilité s'agit-il de la plante-hôte de la chenille (cf. Schurian 1997). L'espèce a vraisemblablement deux générations annuelles. *P. idas*, par contre, est une espèce arboréale à large répartition holarctique évitant toutefois, en général, les régions méditerranéennes. En Anatolie orientale, elle a probablement une seule génération annuelle; elle vit en des biotopes herbeux, souvent dans des régions boisées, et la chenille se nourrit d'une grande diversité de plantes appartenant à la famille des Fabaceae. En Turquie, *P. christophi* est représentée par sa sous-espèce *P. christophi transcaasicus* (Rebel, 1901), qui ne s'y trouve que dans le nord-est (vallée de l'Aras, provinces de Kars et d'Iğdır). Elle y est sympatrique, mais non syntopique, avec *P. idas baldur* (Hemming, 1934), la dernière espèce se rencontrant en des biotopes plus froids à des altitudes dépassant 2000 m. *P. idas baldur* est largement répandue en Turquie, à l'exception de l'extrême nord-est (région de Posof, province d'Ardahan et la partie avoisinante de la province d'Artvin), où se trouve *P. idas altarmena* (Forster, 1936). Ce dernier taxon ressemble fortement à *P. christophi transcaasicus* extérieurement et ceci a induit Hesselbarth, van Oorschot & Wagener (1995) en erreur lorsqu'ils l'y ont rattaché, bien que provisoirement.

Abstract. The taxonomy, distribution and bionomics of *Plebeius christophi* (Staudinger, 1874) and *P. idas* (Linnaeus, 1761) are treated, with special reference to northeastern Turkey and adjacent areas. Lectotypes are designated for the nominal taxa *Lycaena Christophi* Staudinger, 1874, *Lycaena Argyrognomon* Brgstr. var. *Transcaucasica* Rebel, 1901 and *Lycaeides idas* L. Höhenform *altarmena* Forster, 1936, and their type locality is restricted in the present study. *P. christophi* is an eremic species, limited to arid steppe and semidesert areas with *Alhagi* spp. (possibly exclusively *Alhagi maurorum* Medikus), to which plant it is intimately associated and which most probably is its larval host-plant (cf. Schurian 1997): it is presumably bivoltine. On the contrary, *P. idas* is an arboreal species with a wide Holarctic, though largely extramediterranean distribution: in eastern Anatolia it is univoltine and it lives in a variety of grassy habitats, often in woodland areas, the larva feeding on an array of host-plants belonging to the family Fabaceae. In Turkey, *P. christophi* is represented by its

subspecies *P. christophi transcausicus* (Rebel, 1901), that enters the country only in the northeast (Aras Valley, Kars and Iğdır provinces). Here it is sympatric, but not syntopic, with *P. idas baldur* (Hemming, 1934), the latter occurring in cooler biotopes at altitudes of more than 2000 m. *P. idas baldur* is widespread in Turkey, except for the extreme northeast (Posof area, Ardahan province and adjacent area in the Artvin province), where *P. idas altarmena* (Forster, 1936) is found. Last-named taxon looks externally quite similar to *P. christophi transcausicus* and this has mislead Hesselbarth, van Oorschot & Wagener (1995) when they ascribed it, though tentatively, to it.

Zusammenfassung. Taxonomie von *Plebeius christophi* und *Plebeius idas* in der Nordosttürkei (Lepidoptera: Lycaenidae)

In dieser Arbeit wird die Taxonomie, Verbreitung und Bionomie von *Plebeius christophi* (Staudinger, 1874) und *P. idas* (Linnaeus, 1761) — insbesondere aus der Nordosttürkei und den angrenzenden Gebieten — abgehandelt. Die Lektotypen der nominalen Taxa *Lycaena Christophi* Staudinger, 1874, *Lycaena Argyrognomon* Brgr. var. *Transcaucasica* Rebel, 1901 und *Lycaeides idas* L. Höhenform *altarmena* Forster, 1936, und ihre Typenfundorte werden hier festgelegt. *P. christophi* ist eine eremische Art, deren Vorkommen sich auf die trockenen Steppen und Halbwüsten mit *Alhagi* spp. (wahrscheinlich ausschließlich *Alhagi maurorum* Medikus) beschränkt. Die Art findet sich nur in der unmittelbaren Umgebung dieser vermutlichen Raupenfutterpflanze (cf. Schurian 1997) und ist möglicherweise mehrbrütig. Im Gegensatz hierzu ist *P. idas* eine arboreale Art mit einer weiten Verbreitung in der Holarktis, außer in weiten Teilen des mediterranen Europa. Sie bewohnt in Ostanatolien grasige Biotope, oft Waldlichtungen. Sie ist einbrütig und lebt polyphag an verschiedenen Fabaceen. In der Türkei fliegt *P. christophi* nur im Nordosten (Araxes-Tal, Provinz Kars und Iğdır) in der Unterart *P. christophi transcausicus* (Rebel, 1901). Dort kommt sie sympatrisch, aber nicht syntop mit *P. idas baldur* (Hemming, 1934) vor. Letztere findet sich nur in kühleren Biotopen über 2000 m N.N. *P. idas baldur* ist in der Türkei weit verbreitet, mit Ausnahme des extremen Nordostens (Posof-Gebiet der Provinz Ardahan und der angrenzenden Berge der Provinz Artvin), wo *P. idas altarmena* (Forster, 1936) vorkommt. Dieses Taxon ähnelt sehr *P. christophi transcausicus* und wurde daher von Hesselbarth, van Oorschot & Wagener (1995: 603) "vorerst nur als sehr fraglich" zu *christophi transcausicus* gestellt.

Резюме. Таксономические замечания о *Plebeius christophi* и *Plebeius idas* северо-восточной Турции (Lepidoptera: Lycaenidae)

Рассматриваются вопросы систематики, особенности распространения и биологии *Plebeius christophi* (Staudinger, 1874) и *P. idas* (Linnaeus, 1761) в северо-восточной части Турции и сопредельных регионах. В данной статье обозначаются лектотипы номинальных таксонов *Lycaena Christophi* Staudinger, 1874, *Lycaena Argyrognomon* Brgr. var. *Transcaucasica* Rebel, 1901 и *Lycaeides idas* L. Höhenform *altarmena* Forster, 1936; соответственно уточняются их типовые местонахождения. *P. christophi* является пустынным видом, тесно связанным в своем распространении с сухими степями и полупустынями — местами произрастания видов верблюжьей колючки (единственным кормовым растением гусениц является, вероятно, *Alhagi maurorum* Medikus — см. Schurian 1997); вид, по-видимому, развивается в двух поколениях. *P. idas*, наоборот, является арбореальным видом с широким голарктическим, большей частью внепредсредиземноморским, ареалом; в восточной Анатолии вид монофалтинный, населяет разнообразные, покрытые травянистой растительностью, часто лесные, биотопы; кормовые растения гусениц — ряд видов семейства Fabaceae. В Турции *P. christophi* представлен подвидом *P. christophi transcausicus* (Rebel, 1901), который населяет лишь северо-восточные районы (долина Аракса, пров. Карс, Игдыр), где встречается в симпатрии, но не в синтонии (парапатрия), с *P. idas baldur* (Hemming, 1934), населяющим более прохладные биотопы на высотах свыше 2000 м. *P. idas baldur* широко распространен в Турции, за исключением крайнего северо-востока (район Пософ, пров. Ардахан и прилегающие районы пров. Артвин), где найден *P. idas altarmena* (Forster, 1936). Последний по внешности бабочек очень сходен с *P. christophi transcausicus*, что и обусловило ошибочное, хотя и условное, отнесение к нему *altarmena* Хессельбартом, ван Оорсхотом и Вагенером (Hesselbarth, van Oorschot & Wagener 1995).

Key words: Lycaenidae – *Plebeius christophi christophi* – *Plebeius christophi transcausicus* – *Plebeius idas baldur* – *Plebeius idas altarmena* – taxonomy – nomenclature – lectotype – northeastern Turkey

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1. Introduction

One of the items on our agenda during our 1996 field trip to north-eastern Turkey was to observe *Plebeius christophi transcausicus* (Rebel, 1901) in its habitat in the Aras Valley (Kars and Iğdir provinces). We also decided to tackle a problem raised by Hesselbarth, van Oorschot & Wagener (1995: 603–604), who noted that a series of blues from Posof (Ardahan province), near the Georgian border, looked quite similar to *P. christophi transcausicus* on the upperside in the males, while the underside reminded of *P. idas baldur* (Hemming, 1934); the females, however, were quite distinct from *P. christophi transcausicus*. In order to do so, we paid a visit to the area around Posof as well, with the aim of studying these interesting butterflies in their biotope and to collect a series of comparative material.

We visited the Aras Valley on 2–7.VIII.1996 and had the good fortune to meet Dr. Klaus G. Schurian and Dr. Wolfgang Eckweiler, who oriented us to the right kind of biotope – extremely arid steppe areas almost devoid of vegetation, except for omnipresent bushes of *Alhagi maurorum* Medikus (often quoted as *A. camelorum* Fisch. in literature) (figs. 1 & 2; see also Schurian 1997: 168, fig. 1). We soon spotted several colonies of *P. christophi transcausicus* and, like Schurian (*loc. cit.*), noted that while most specimens were already worn to very worn, it was still possible to find freshly emerged ones as well, suggesting a protracted brood. Butterflies were intimately associated with *Alhagi* bushes, always flying very close to this plant, on which they take nectar (own observations), but also oviposit (Schurian *loc. cit.*). On 7.VIII, leaving the Aras Valley to the north, we noticed that the landscape soon changed dramatically and neither more *Alhagi* (nor *P. christophi transcausicus*) were observed.



Fig. 1: Characteristic biotope of *Plebeius christophi transcausicus* (Rebel, 1901) in the Aras Valley (NE Turkey), with Mt. Ararat in the background.



Fig. 2: *Alhagi maurorum* Medikus, the larval host-plant of *Plebeius christophi transcaucasicus* (Rebel, 1901) in the Aras Valley (NE Turkey).



Fig. 3: *Astragalus* sp., the supposed larval host-plant of *Plebeius idax altarmena* (Forster, 1936), vic. Posof (NE Turkey, Ardahan province).

On 8.VIII, we explored a series of biotopes in the vicinity of Posof and found one single thriving colony of the taxon we searched for; here as well, the butterflies were flying only in the immediate vicinity of a low plant we tentatively identify as *Astragalus* sp. (fig. 3) and that we predict to be the larval host-plant. The biotope has nothing in common with that of *P. christophi transcausicus* from the Aras Valley, consisting of lush vegetation in a forested area dominated by a mix of various deciduous trees with firs and pines. All specimens observed appeared quite fresh, the males outnumbering the females; they were found in company of the related *P. argus aegidion* (Meisner, 1818) and –less commonly– *P. argyrognomon caspicus* (Forster, 1936); further characteristic butterfly species included *Coenonympha arcania* (Linnaeus, 1761), *Melanargia larissa astanda* (Boisduval, 1848), *Limenitis camilla camilla* (Linnaeus, 1764), *Melitaea caucasogenita* Verity, 1930 and *M. athalia athalia* (Rottemburg, 1775).

Our field observations tend to support the attribution of the Posof population to *P. idas* rather than to *P. christophi*, a view already expressed by Eckweiler (pers. comm.; see also Eckweiler & Görgner 1981: 101–102). Nevertheless, it differs markedly from the remaining *P. idas baldur* populations. The present study comprises a taxonomic revision of the populations of *P. christophi* from northern Iran and Turkmenistan westwards till the Aras Valley in north-eastern Turkey and of those of *P. idas* from Turkey, Transcaucasia and the Great Caucasus, including lectotype designations for three nominal taxa.

The following abbreviations, used throughout the remainder of this paper, are listed here in full as well:

ICZN	International Code on Zoological Nomenclature, 3rd. edition, 1985
NHMW	Naturhistorisches Museum Wien
VLCA	Vlaamse Lepidoptera Collectie Antwerpen
ZMA	Instituut voor Systematiek en Populatiebiologie, Zoölogisch Museum Amsterdam
ZMHB	Zoologisches Museum der Humboldt-Universität zu Berlin
ZSSM	Zoologische Staatssammlung München

2. *Plebeius christophi* (Staudinger, 1874)

"*Lycaena Christophi* n. sp." Staudinger, O., 1874. Einige neue Lepidopteren des europäischen Faunengebiets. — *Stettin.ent.Ztg.* 35: 87–90. Locus typicus restrictus: "Schahrud" [Iran, Semnān province, Shāhrūd]. Type material: lectotype ♂ "Origin.[al]" [printed] / "Schahrud Chr." [handwritten], leg. H. Christoph in coll. O. Staudinger, ZMHB, design. here Olivier, van der Poorten & De Prins.

= "*Lycaena Christophi* Staudg. i.l." Christoph, H., 1873. Weiterer Beitrag zum Verzeichnisse der in Nord-Persien einheimischen Schmetterlinge. — *Horae Soc.ent.ross.* 10: 24. Locus typicus: "bei Schahrud". Unavailable name (Article 12(a) of ICZN). Nomen nudum.

DISTRIBUTION AND GEOGRAPHIC VARIATION. From the Aras Valley in north-eastern Turkey (Kars and Iğdır provinces), Armenia, Azerbaijan and Iranian Āzarbāyjan (Sūfīyān) (*P. christophi transcausicus*) over northern Iran, Turkmenistan, SW. Kazakhstan (*P. christophi christophi*) in a series of further described subspecies over Afghanistan, Pakistan (Baluchistan, Chitral), NW. India (Kashmir), Tajikistan, Uzbekistan, Kyrgyzstan and W. China (Evans 1932, Forster 1936, Sakai 1981, Eckweiler [1991], Lukhtanov & Lukhtanov 1994, Hesselbarth, van Oorschot & Wagener 1995, Koçak 1996, Tshikolovets 1997).

BIONOMICS. An eremic butterfly, apparently restricted to arid steppe and semidesert areas, usually at moderate altitudes (330–1200 m) in the western part of its range, but reaching altitudes up to 3700 m in Pamir (Tshikolovets 1997). Adults have been recorded

from as early as mid-April (Groum-Grshimaïlo 1890) until as late as September (Evans 1932, Lukhtanov & Lukhtanov 1994, Tshikolovets 1997). The butterfly is closely linked to *Alhagi maurorum* (vide supra), its larval host-plant (Christoph [1877]: 199; see also Christoph 1884, 1888, Evans 1932, Eckweiler [1991], Lukhtanov & Lukhtanov 1994, Hesselbarth, van Oorschot & Wagener 1995, Schurian 1997), but Zhdanko (1997: 105) also reports *Hippophae rhamnoides* L. (Elaeaginaceae) from Tajikistan.

2.1. *Plebeius christophi christophi* (Staudinger, 1874)

ILLUSTRATIONS. Plates 1 & 2, figs. 1–6.

MATERIAL EXAMINED. **Iran:** Lectotype ♂ "Schahrud" [Semnān province, Shāhrūd], leg. H. Christoph, in coll. O. Staudinger, ZMHB; ♂ "Persia Hyrcania", in coll. VLCA; ♂♀ "Ostan Khorāsān [Khorāsān province] / Mashhad, 970 m", 19–23.IV.1977, leg. W. L. Blom, in coll. VLCA. **Turkmenistan:** 2♂, ♀ "USSR Turkestan / As[k]habad Reg., Kurtlin L. Desert, Kara-kuni, 350 m", 27.VI.1976, leg. J. A. Vaněk, in coll. VLCA; 2♂, 2♀ "USSR Turkestan / As[k]habad Reg. Kurtlinskoe Lake 58°30'E 38°00'N, 330 m", 3.VI.1986, leg. J. A. Vaněk, in coll. VLCA; 2♀ "Turkmenia / Kara-Kala district, Ai Dere village", 4–13.V.1985, leg. P. Ivinskis, in coll. VLCA. **Kazakhstan:** 3♂, 2♀ "SW Kazakhstan / Mangyshlak penin. vic. Fetisovo", 7.VIII.1988, in coll. VLCA.

DESCRIPTION. Male upperside ground-colour light violet blue, with a very narrow black marginal line; underside light grey, spots small and inconspicuous, submarginal row of markings very weakly expressed or vestigial and almost of ground-colour. Female quite similar, upperside with blue suffusion often covering most of both fore- and hindwings, leaving only costa, apex and outer margin brown, in the two females from the Kara-Kala district the blue suffusion is the least expressed.

DISTRIBUTION. SW. Kazakhstan, Turkmenistan, northern Iran (Semnān and Khorāsān provinces); range to the north and east not well documented. Specimens from Robate-Tork (Iran, Tehrān province) are phenotypically transitional to the next subspecies (Eckweiler [1991]).

BIONOMICS. Vide supra. Adults reported from early May until August, presumably in two broods. Near Krasnovodsk (Turkmenistan), Christoph ([1877]: 199) found larvae on *Alhagi* in late May; they were green with a yellow lateral stripe and yielded butterflies in the first half of July.

2.2. *Plebeius christophi transcausicus* (Rebel, 1901)

"*Lycaena Argyrognomon* Brgstr. var. *Transcaucasica* n. var. ♂♀" Rebel, H., 1901. Ueber einige neue von Herrn Max Korb in Westasien gesammelte Lepidopterenformen. — *Annlh.naturh.Mus.Wien* 16(3): 166–167. Locus typicus restrictus: "Russ. Armen. Kulp" [Turkey, Iğdır, Tuzluca]. Type material: lectotype ♀ "Russ. Armen. Kulp. 1901 Korb." [handwritten] / "Sammlung Osthelder" [printed], leg. M. Korb, in ZSSM; design. here Olivier, van der Poorten & De Prins.

ILLUSTRATIONS. Plates 1 & 2, figs. 7–12.

MATERIAL EXAMINED. **Turkey:** Lectotype ♀ "Russ. Armen. Kulp" [Iğdır, Tuzluca], 1901, leg. M. Korb, in ZSSM; ♂ "Armen. ross. Kulp" [Iğdır, Tuzluca], in ZSSM; ♀ Iğdır, Büyük Ağrı Dağı, 15 km SW Aralık, 1200 m, St. 2329, 4.VIII.1996, leg. W. De Prins, A. Olivier & D. van der Poorten, in VLCA; 5♂, 5♀ Iğdır, 10 km N Tuzluca, 1100 m, St. 2336, 7.VIII.1996, leg. W. De Prins, A. Olivier & D. van der Poorten, in VLCA; 15♂, 7♀ Kars. betw. Köprübaşı-Akçay, 1100 m, St. 2323, 2.VIII.1996, leg. W. De Prins, A. Olivier & D. van der Poorten, in VLCA. **Azerbaijan:** 4♂ vill. Jenikend, 50 km N Gjandzha, 8.V.1972, leg. Y. P. Nekrutenko, in ZMA; 2♀ Kura Valley, 50–60 km N Mingetshaur, Palan-Tiukan, 16.V.1972, leg. Y. P. Nekrutenko, in ZMA.

DESCRIPTION. Male upperside ground-colour violet blue, usually more intense than in nominotypical *christophi*, often with a row of black submarginal dots along outer margin of hindwing; underside with both spotting and submarginal row of markings well

developed, the latter dark yellow. Female upperside generally with extensive blue suffusion, but less so in material from Azerbaijan (1 ♀ only with traces of it at the very base of the wings), black submarginal dots even better developed than in male, occasionally surrounded proximad by dark yellow rings; underside with spotting and markings even more conspicuous than in male.

DISTRIBUTION. Turkey, Aras Valley in the provinces of Kars and Iğdır; Armenia, Jerevan (Rebel 1901); Azerbaijan; Iran, Āzarbāyjān –é Shargī province, Sūfīyān (Eckweiler [1991]).

BIONOMICS. Vide supra. Records of adults from mid-May (Koçak 1977) to mid-August (Hesselbarth, van Oorschot & Wagener 1995), presumably in two broods (cf. Schurian 1997: 169). Oviposition takes place on *Alhagi maurorum* (see Schurian 1997 for a detailed account). There are at least four larval instars: L1 is dirty grey with long hairs, the mature caterpillar is green, almost unmarked (Schurian 1997, compare with Christoph [1877]).

NOTES.

1. Forster (1936: 102) ascribes this taxon to "*Lycaena idas*", mentioning 3 ♂, 9 ♀ (2 ♀ from "Eriwan" [Jerevan]). Through the kind help of Dr. Axel Hausmann (ZSSM), we received two specimens (♂ ♀) for study: the female has been designated as lectotype (vide supra); the male (illustrated here on plates 1 & 2, fig. 9) could belong to the original type series as well, originating from "Armen. ross. Kulp", but it lacks any label confirming that it was indeed collected by Korb in 1901 and therefore we do not include it as a paralectotype.

2. Material listed by Koçak (1977: 134) as "*Plebejus (Lycaeides) idas* ssp. *altarmena* Forster" from "Kulp (Tuzluca) 800–1400 m" belongs in fact to *P. christophi transcausicus* (cf. Hesselbarth, van Oorschot & Wagener 1995: 604).

3. Future discovery of additional populations of *P. christophi* in northern Iran, between Tabrīz and Shāhrūd, could reveal a gradual disappearance of the underside spotting and markings as one goes to the east, as Eckweiler's ([1991]) record of transitional specimens from Tehrān province seems to suggest.

3. *Plebeius idas* (Linnaeus, 1761)

"*Papilio Idas*" Linnaeus, C., 1761. *Fauna Svecica sistens Animalia Sveciae Regni: Mammalia, Aves, Amphibia, Pisces, Insecta, Vermes. Distributa per classes & ordines, genera & species, cum differentiis specierum, synonymis auctorum, nominibus incolarum, locis natalium, descriptionibus Insectorum* (ed. 2): 284. Locus typicus: southern Sweden. Type material: unknown (cf. Verity 1913).

DISTRIBUTION. Holarctic; widely distributed in boreal and temperate areas in a multitude of, often phenotypically well differentiated, population groups. It is quite possible that the name *idas* in fact covers several distinct species: in the present study we only consider the Anatolian populations and those of adjacent areas in Transcaucasia and the Great Caucasus.

3.1. *Plebeius idas baldur* (Hemming, 1934)

"*Lycaeides argyrognomon baldur* nom. n. pro *Lycaena argyrognomon*, Bergstr. Rasse *balcanica* Züllich" Hemming, F., 1934. Revisional notes on certain species of Rhopalocera (Lepidoptera). — *Strylops* 3(9): 193. Replacement name for *Lycaena argyrognomon* Bgstr. f. *balcanica* Züllich, 1929.

= "*Lycaena argyrognomon* Bgstr. f. *balcanica*" Züllich, R., 1929. Einige neue Lycaenidenformen aus meiner Sammlung. — *Z.öst.EntVer.* 14: 52. Locus typicus: Bulgaria, Rila Mountains; Hercegowina, Vucija bara. Type

material: in NHMW (according to Hesselbarth, van Oorschot & Wagener 1995: 601). Junior primary homonym of *Lycaena balkanicus* Freyer, [1844] (cf. ICZN, Art. 58(5)).

ILLUSTRATIONS. Plates 1 & 2, figs. 21–32.

MATERIAL EXAMINED. Due to the great number of specimens examined, we shall only mention the province, number of specimens and depository (all material from Turkey): 3♂ Bolu, in VLCA; 2♂ Antalya, in VLCA; ♂ Konya, in VLCA; 30♂, ♀ Niğde, in VLCA, ZMA; ♂ Bingöl, in ZMA; ♂ Gümüşhane, in VLCA; 100♂, 16♀ Erzurum, in VLCA, ZMA; 14♂, 4♀ Artvin, in VLCA, ZMA; 41♂, 2♀ Kars, in VLCA, ZMA; 2♂ Ağrı, in VLCA; ♂ Iğdır, in VLCA; 7♂ Van, in VLCA, ZMA; 3♂ Hakkari, in VLCA, ZMA.

DESCRIPTION. Male upperside deep violet to purplish blue, with a broad (1–3 mm) black margin, veins black, usually prominent, row of black submarginal dots along outer margin of hindwing usually part of black margin; underside brownish grey with all spots and submarginal row of markings well developed, the latter orange; white ocellation of spots more conspicuous than in *P. christophi transcausicus*, due to the darker ground-colour. Female upperside brown, exceptionally with vestigial blue basal suffusion; orange marginal lunules usually conspicuous, especially on hindwing, sometimes forming a continuous band.

VARIATION. See Hesselbarth, van Oorschot & Wagener (1995: 600).

DISTRIBUTION. According to Hesselbarth, van Oorschot & Wagener (1995: 602): Hercegowina, Macedonia, Bulgaria, Anatolia and the adjacent areas to the east of Turkey. In the extreme northeast of Turkey (Ardahan province, northern part of Artvin province) replaced by the next subspecies (this study). According to further material in the VLCA collection, the range of *baldur* also includes Bosnia (Dobropolje), Serbia (Zaječar) and Greece until as far south as Stereá Eláda (Óros Timfristós, Óros Kaliakoúda, Óros Íti); a small series from Hungary (Mermély Duna) is also referable to this taxon. Material from the Chechen-Ingosh Republic, Kezenoy-am (northern Great Caucasus), illustrated by Bálint *et al.* (1996: 350–351, plate 1) also clearly agrees with it: this suggests that populations from Romania, Ukraine and southern Russia (pro parte) can also be ascribed to it, but we haven't seen any material from these regions.

BIONOMICS. On grassy slopes in dry as well as humid, coniferous, deciduous or mixed forested areas, usually at altitudes between 1000 and 2500 m, sometimes as low as 500 m; in the central Taurus (Niğde province, Bolkar Dağları) and in the eastern Pontus (Artvin province, Kaçkar Dağları) on alpine meadows up to nearly 3000 m: the butterfly avoids xerotherm mediterranean biotopes. According to Hesselbarth, van Oorschot & Wagener (1995: 601), at altitudes below 1000 m in western Anatolia the species is bivoltine (May–early June and mid-July to September), in eastern Anatolia univoltine in July–August: this is also our experience both in Turkey and in Greece. For data on the biology, early stages and larval host-plant of *P. idas* (there are no data at hand for *P. idas baldur*!) see Malicky (1961), Weidemann (1986, 1995), Lepidopteren-Arbeitsgruppe (1987), Jutzeler (1989, 1990), Ebert & Rennwald (1991), Bink (1992) and Hesselbarth, van Oorschot & Wagener (1995).

NOTES.

1. If we consider the distribution of "*baldur*" as reported in the present study, it becomes quite possible that another, older name is available for this taxon. As such topic is beyond the scope of this contribution, we follow Hesselbarth, van Oorschot & Wagener

(1995) here in applying the name *Plebeius idas baldur* for the bulk of the Turkish populations.

2. In Turkey, *P. idas baldur* is sympatric with *P. christophi transcaucasicus* in Iğdır province where, according to Eckweiler ([1991]: 46), both taxa occur within a few kilometres from each other near Tuzluca: the former lives higher up in the mountains, while the latter sticks to its characteristic habitat, *Alhagi*-dominated arid steppe areas at moderate altitudes. One of us (WDP) collected 1♂ *P. idas baldur* at 12 km S. Akçay (2150 m) on 19.VII.1990, almost one thousand meters higher up than the nearby *P. christophi transcaucasicus* populations. 2♂ of *baldur* in ZSSM (illustrated here on plates 1 and 2, figs. 21 & 22) originate from "Armenien Agri-Dagh 2500–3000 m" [Iğdır, Ağrı Dağları near Kazıkoparan, cf. note in Hesselbarth, van Oorschot & Wagener (1995: 1116)], again much higher than *P. christophi transcaucasicus*.

3.2. *Plebeius idas altarmena* (Forster, 1936), stat. rev. comb. n.

"[*Lycaena idas* L.] Höhenform (...) *altarmena* nov." Forster, W., Beitrag zur Systematik des Tribus Lycaenini unter besonderer Berücksichtigung der *argyrognomon*- und der *argus*-Gruppe. — *Mitt.münch.ent.Ges.* 26(2): 103–104, Tafel XII & XIII, fig. 24. Locus typicus restrictus: "Achalzich Chambobel" [Georgia, Akhaltsikhe]. Type material: lectotype ♀ "♀-Typus W. Forster, München" [printed] / "*Lyc. idas altarmena* Forst." [handwritten] / "Achalzich Chambobel 1910. Korb." [printed] [Georgia, Akhaltsikhe], "coll. Osthelder" [handwritten], leg. M. Korb, in ZSSM; design. here Olivier, van der Poorten & De Prins.

ILLUSTRATIONS. Plates 1 & 2, figs. 13–20.

MATERIAL EXAMINED. **Turkey:** 25♂, 8♀ Ardahan, 3–5 km S Posof, 1700–1800 m, St. 2338, 8.VIII.1996, leg. W. De Prins, A. Olivier & D. van der Poorten; ♂ Ardahan, 3–5 km S Posof, 1650 m, St. 2343, 10.VIII.1996, leg. W. De Prins, A. Olivier & D. van der Poorten; ♂ Artvin, 9–12 km ESE Ardanuç, 1000–1200 m, St. 558, 30–31.VII.1989, leg. H. van Oorschot, W. De Prins, F. Coenen & R. Koolbergen, all in VLCA. **Georgia:** Lectotype ♀ "Achalzich Chambobel" [Akhaltsikhe], leg. M. Korb, in ZSSM. **Russia:** 2♂ Kabardino-Balkaria, Caucasus Major [Great Caucasus], Elbrus area, Mt. Tsheget, 2500 m, 11.VII.1985, leg. Y. P. Nekrutenko, in ZMA.

DESCRIPTION. Male upperside ground-colour violet blue, with a very narrow black marginal line, much like *P. christophi transcaucasicus*; underside much like *P. idas baldur*, but ground-colour lighter brownish grey. Female upperside usually with extensive blue suffusion, sometimes covering nearly the entire wing, except for a series of black submarginal dots on hindwing (and sometimes on forewing) (plate 1, figs. 13 & 14), but often less developed as in *P. christophi transcaucasicus* (plate 1, fig. 15), rarely much less developed (plate 1, fig. 16), but never to such an extreme degree as in even the "most blue" *P. idas baldur*, orange marginal lunules, when present, less developed than in *P. idas baldur* and always restricted to hindwing; underside darker than in male, as in female *P. idas baldur*.

DISTRIBUTION. Known from the extreme northeast of Turkey (Ardahan province, vic. Posof; Artvin province, Yalnızçam Dağları, vic. Ardanuç), Georgia (Akhaltsikhe), Great Caucasus (Elbrus area, Mt. Tsheget); general distribution in the Caucasus unknown, but in the northern Great Caucasus (Chechen-Ingosh Republic) apparently replaced by *P. idas baldur* (cf. Bálint et al. 1996).

BIONOMICS. Euxinian element (*sensu* Wagener 1995: 116), occurring in open, flower-rich, grassy spots and clearings in humid temperate, subeuxinian mixed coniferous-deciduous forest areas; recorded from altitudes between 1000 m (Turkey, Artvin province) and 2500 m (S. Russia, Great Caucasus). Probably univoltine in July–August. Biology and early stages unknown. Near Posof, we found the butterflies in close

association with *Astragalus* sp. (fig. 3), suggesting that this is the larval host-plant. The syntopic *P. argyrognomon caspicus* was linked to *Coronilla varia* L.

NOTES.

1. Forster (1936: 103–104) named *altarmena* as an altitudinal form ("eine ausgesprochene Höhenform") as part of an "Asiatische Rassengruppe", possibly intended to apply to an infrasubspecific entity (though he lists it as a trinomen, viz. "*Lyc.[aena] idas altarmena*" in the legend of his Tafel XII), while it has subsequently been treated as a subspecies name in citations published before 1985 by Higgins (1966: 214), Koçak (1977: 134), Goossens & Cromphout (1978: 106), Goossens (1979: 113) and Eckweiler & Görgner (1981: 101–102) and is thus, in compliance with Article 45(f, g) of ICZN, available and valid, retaining subspecies rank with Forster as its author and 1936 as its date of publication.

2. Forster (1936: 103) described *altarmena* after "1♀ Achalzich, leg. Korb; 1♂ Armenien; 1♂ Kasikoporan; 4♂ Armenien, Agri Dag, VII. 2500–3000 m leg. Kotsch". Through the kind help of Dr. Axel Hausmann (ZSSM), we received three specimens (2♂, 1♀) of this material for study, illustrated here on plates 1 and 2, figs. 13, 21 & 22. Obviously, two different taxa are included: both males clearly belong to *P. idas baldur* and indeed Hesselbarth, van Oorschot & Wagener (1995: 601) synonymised "*Lycaena idas* f. *altarmena* Forster, W., 1936" under "*Lycaeides idas baldur* Hemming, 1934" [sic!]; the female is quite different and it belongs to the taxon also occurring in Posof. It is worthy to quote here the following note by Eckweiler & Görgner (1981: 101–102 [our translation from German]): "The present series [from Erzurum, Palandöken Dağları] is hardly distinguishable from a comparative series from Kazıkoparan (Prov. Kars), the type locality of ssp. *altarmena*. Nevertheless, a larger series also includes no single blue female. The females from Kazıkoparan, belonging to ssp. *altarmena*, are brown with moderately orange-yellow marginal lunules. The submarginal markings on the forewings are often absent. The females from Erzurum have the marginal lunules on the upperside somewhat more strongly expressed, though not as much as in ssp. *balcanica* Züllich [sic! recte *baldur* Hemming]. The ground-colour is also brown and hence does not agree with the description of the specimen from Akhaltsikhe quoted as "Allotype female" [sic!] (Forster 1936). On the contrary, this "Allotype" [sic!] belongs to a population having exclusively blue females, that cannot be ascribed to *altarmena* anymore. Of this subspecies, a series from Posof (Prov. Kars) [now Ardahan] is available, that was found within a few kilometres distance from Akhaltsikhe in Russia [sic! recte Georgia], in the same valley. The males from Posof have no pronounced black margin as in ssp. *altarmena* Forster and *balcanica* Züllich, while the ground-colour of the underside is lighter. A naming of the Posof-Akhaltsikhe population must await a revision." If we were to follow both Eckweiler & Görgner (1981) and Hesselbarth, van Oorschot & Wagener (1995), this would have the following consequences:

- [*Lycaena idas* L.] Höhenform *altarmena* Forster, 1936 would indeed be a junior subjective synonym of *Lycaeides argyrognomon baldur* Hemming, 1934;
- the problem of the correct naming of the Posof-Akhaltsikhe population would remain.

To solve this problem, we hereby restrict the type locality of *altarmena* to Akhaltsikhe and designate the only female specimen as the lectotype, expressly excluding all the remaining "types". By this action, the name *altarmena* becomes available for this taxon and no new name has to be given to it. Higgins (1966), Goossens & Cromphout (1978), Goossens (1979) and Eckweiler & Görgner (1981; *vide supra*) all applied the name *altarmena* to the taxon currently known as *Plebeius idas baldur*, while Koçak's (1977)

application of this name in fact covers two entirely different nominal taxa, viz. *P. idas baldur* and *P. christophi transcasicus* (vide supra).

3. In Artvin province, in the Yalnızçam Dağları, the ranges of *altarmena* and *baldur* come very close, i.e. within a distance of less than 40 km. The two resp. localities are as follows:

- *altarmena*: 9–12 km ESE Ardanuç, 1000–1200 m, St. 558, 30–31.VII.1989, leg. H. van Oorschot, W. De Prins, F. Coenen & R. Koolbergen, in coll. VLCA.
- *baldur*: 15–22 km E. Demirkent, 1500–1900 m, St. 2318, 30.VII.1996, leg. W. De Prins, A. Olivier & D. van der Poorten, in coll. VLCA.

More to the west of Artvin and Demirkent (Melodağı, 24 km SW Artvin; Kaçkar Dağları; 3 km S Kılıçkaya), only *baldur* is known. It would be worthwhile to visit more localities in the area to see if the ranges of both taxa meet.

4. Discussion

P. christophi and *P. idas* are two totally different insects. The former is an eremic species, restricted to arid steppe and semidesert areas in Central Asia, its distribution to the west just reaching north-eastern Turkey, in the Aras Valley. It is presumably a bivoltine insect, probably monophagous on *Alhagi maurorum* (Fabaceae) or at best oligophagous on closely related *Alhagi* spp. as well (but see Zhdanko 1997). *P. idas* is an arboreal butterfly with a wide Holarctic distribution, avoiding mediterranean biotopes in Turkey and, by and large, in Europe where it has a largely extramediterranean distribution. It is probably univoltine in most of Turkey, certainly so in eastern Anatolia, and is polyphagous on a wide range of Fabaceae. In the Aras Valley, *P. christophi transcasicus* and *P. idas baldur* are sympatric, but never syntopic: *christophi* sticks to *Alhagi*-dominated steppes at moderate altitudes, while *idas* is restricted to colder subalpine biotopes at altitudes well over 2000 m.

In the extreme northeast of Turkey, at the Georgian border, a different-looking population is found, that reminds much of *P. christophi transcasicus* at a first glance: violet blue with a very narrow black marginal line, females with large extension of the suffusion on upperside. It does, however, have nothing to do with *christophi*: it lives in biotopes with a lush vegetation in forested areas and its supposed larval host-plant is totally different from that of *christophi*. For these reasons, we disagree with the tentative attribution of the Posof population to "*Plebeius* (?) *christophi transcasicus* (Rebel, 1901) (status incertus)" by Hesselbarth, van Oorschot & Wagener (1995: 603–604), but, while we share the view of Eckweiler & Görgner (1981) as far as the taxonomic status of the Posof population is concerned, we do not agree with their conclusions on nomenclature (vide supra).

An examination of both male and female genitalia of all taxa dealt with in the present study did not reveal any constantly differentiating character between these.

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Legend of plates 1 (uppersides) and 2 (undersides)

1–6: *Plebeius christophi christophi* (Staudinger, 1874)

1. *Lycaena Christophi* Staudinger, 1874. Lectotype ♂, "Origin.[al]" [printed] / "Schahrud Chr." [handwritten] [Iran, Semnān province, Shāhrūd], leg. H. Christoph. in coll. O. Staudinger, Zoologisches Museum der Humboldt-Universität zu Berlin (ZMHB). Also illustrated in Tshikolovets (1997: 238–239, plate XL, figs. 12–14).
2. ♂, "USSR Turkestan" [Turkmenistan], As[k]habad Reg., Kurtlin L. Desert, Kara-kumi, 350 m, 27.VI.1976, leg. J. A. Vaněk, in coll. VLCA.
3. ♀, same data as 2.
4. ♀, "USSR Turkestan" [Turkmenistan], As[k]habad Reg., Kurtlinskoe Lake 58°30'E 38°00'N, 330 m, 3.VI.1986, leg. J. A. Vaněk, in coll. VLCA.
5. ♂, SW Kazakhstan, Mangyshlak penin., vic. Fetisovo, 7.VIII.1988, in coll. VLCA.
6. ♀, "Turkmenia" [Turkmenistan], Kara-Kala district, Ai-Dere village, 4–13.V.1985, leg. P. Ivinskis, in coll. VLCA.

7–12: *Plebeius christophi transcaasicus* (Rebel, 1901)

7. ♂, Turkey, Kars, Betw. Köprübası-Akçay, 1100 m, St. 2323, 2.VIII.1996, leg. W. De Prins, A. Olivier & D. van der Poorten, in coll. VLCA.
8. ♀, Turkey, Iğdır, 10 km N Tuzluca, 1100 m, St. 2336, 7.VIII.1996, leg. W. De Prins, A. Olivier & D. van der Poorten, in coll. VLCA.
9. ♂, "E. Pfeiffer München" [printed] / "Armen. ross. Kulp" [handwritten] [Turkey, Iğdır, Tuzluca] / "Preparat No 105 W. Forster München" [printed], in coll. Zoologische Staatssammlung München (ZSSM). Also illustrated in Forster (1936: Tafel XII & XIII, fig. 25). Photograph of genitalia in Forster (1936: Tafel VIII, fig. 21), the original slide appears to be lost (A. Hausmann in litt. 21.XI.1996).
10. *Lycaena Argyrognomon* Brgrstr. var. *Transcaucasica* Rebel, 1901. Lectotype ♀, "Russ. Armen. Kulp. 1901 Korb." [handwritten] [Turkey, Iğdır, Tuzluca] / "Sammlung Osthelder" [printed], leg. M. Korb, in coll. ZSSM.
11. ♂, same data as 7.
12. ♀, same data as 8.

13–20: *Plebeius idas altarmena* (Forster, 1936)

13. [*Lycaena idas* L.] *Höhenform altarmena* Forster, 1936. Lectotype ♀, "♀-Typus W. Forster, München" [printed] / "Lyc. idas altarmena Forst." [handwritten] / "Achalzich Chambobel 1910. Korb." [printed] [Georgia, Akhaltsikhe], "coll. Osthelder" [handwritten], leg. M. Korb, in coll. ZSSM. Also illustrated in Forster (1936: Tafel XII & XIII, fig. 24).
14. ♀, Turkey, Ardahan, 3–5 km S Posof, 1700–1800 m, St. 2338, 8.VIII.1996, leg. W. De Prins, A. Olivier & D. van der Poorten, in coll. VLCA.
- 15–16. ♀, same data as 14.
- 17–19. ♂, same data as 14.
20. ♀, same data as 14.

21–32: *Plebeius idas baldur* (Hemming, 1934)

21. ♂, "E. Pfeiffer München" [printed] / "Armen Vj. Kars VII" [handwritten] / "Armenien Agri-Dagh Juli 2500–3000 m leg. Kotsch" [printed] [Turkey, Iğdır, Ağrı Dağları near Kazıkoparan] / "Cotypus W. Forster, München" [printed] / "Lyc. idas altarmena Forst." [handwritten], leg. H. Kotsch, in coll. ZSSM.
22. ♂, same data as 21.
23. ♂, "Mann Brussa 1863" [printed] ([Turkey, Bursa] / "Lycaena idas altarmena Forst." [handwritten] / "det. W. Forster München" [printed] / "Lycaena idas-altarmene FORST" [handwritten] / "7 00" [printed] / "Preparat No. 624 W. Forster, München" [printed], leg. J. J. Mann, in coll. ZSSM.
24. ♂, Turkey, Artvin, Kaçkar Dağları, 34 km SW Sarıgöl, 2100–2600 m, St. 1724, 16–18.VII.1991, leg. W. De Prins, D. van der Poorten & A. Riemis, in coll. VLCA.
25. ♂, Turkey, Bolu, Abant Gölü, 1200 m, 12.VII.1988, leg. A. Olivier, in coll. VLCA.
26. ♂, Turkey, Erzincan, Road to Çayırılı, 14 km N Erzincan, 2000 m, St. 1733, 21.VII.1991, leg. D. van der Poorten & W. De Prins, in coll. VLCA.
27. ♂, Turkey, Van, 1–15 km N Çatak, 1900–2000 m, St. 604, 2–5.VII.1990, leg. H. van den Brink, W. De Prins & D. van der Poorten, in coll. VLCA. Also illustrated in Hesselbarth, van Oorschot & Wagener (1995: Tafel 102, fig. 51).
28. ♀, Turkey, Artvin, Kaçkar Dağları, 5 km S Yaylalar, 2500–2800 m, St. 2351, 14.VIII.1996, leg. W. De Prins, A. Olivier & D. van der Poorten, in coll. VLCA.
29. ♂, Turkey, Tunceli, 5–30 km W Tunceli, Road Tunceli-Ovacık, 1100 m, St. 399, 11–12.VII.1987, leg. H. van Oorschot, Th. van Oorschot, W. De Prins & F. Coenen, in coll. VLCA.
30. ♂, same data as 29.
31. ♀, Turkey, Kars, 7–10 km S. Sarıkamış, 2000 m, St. 356, 30.VII.–5.VIII.1986, leg. W. De Prins, in coll. VLCA.
32. ♀, Turkey, Erzincan, Road to Çayırılı, 8 km N Erzincan, 1700–1800 m, St. 1732, 21.VII.1991, leg. D. van der Poorten & W. De Prins, in coll. VLCA.

Plate 1



